

General Information

1992
Video: 4 Heads Rotary
Audio: Fixed Head 1CH
Covers Models
Akai VS-F441/F450
Akai VS-F455/F490
Akai VS-F497

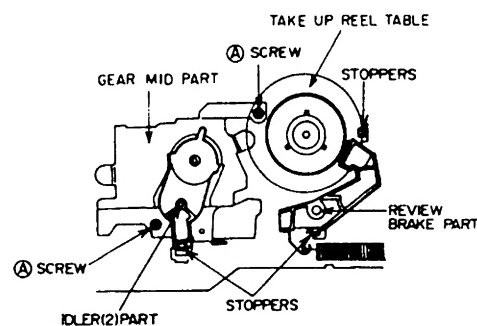
Matrix		
Item	See Model	
Mechanical Parts View	Akai VS-422/425 89/90 Book.	
Mechanical Adjustments	Akai VS-F10/F11 91/92 Book.	
Replacement of Idler	Akai VS-F410	
Back Tension Adjustment	Akai VS-F260	
Power Supply - VS-F490	Akai VS-F260	
Power Supply - VS-F440	Akai VS-F260	
Power Supply - VS-F441/F450/F455/F490/F497	Akai VS-F260	
Main Diagram 1/3	Akai VS-F260	
Main Diagram (B)	Akai VS-F260	
Operation (A)	Akai VS-F260	
VPST/PDC	Akai VS-F260	
VIF Unit	Akai VS-F260	
R/C Others	Akai VS-F260	

Head Motors and Miscellaneous	
Part No.	Description
All models:	
BV-V1123A410B	Lower Drum BLK X450DGN
BV-V1123A420B	Upper Drum BLK X450EGN
BM-401296J1	Motor E20EL89 (Drum Motor)
For Models:	
VS-F440EA/EDG/ED1/EK/EM/EO/ EOG-V/EOH	
VS-F441EA/F450-EOH	
VS-F455EOH	
HR-405340J	Head Combo HVMZA1121A
HE-390013J	Head E HVFME0020A
For Models:	
VS-F480EK-V/EOG-V	
VS-F490EM/EO/EOH/ES	
VS-F497EOH	
HR-405340J	Head Combo HVMZA1121A
HE-390013J	Head HVFME0020A
For Models:	
VS-F480EK-V/EOG-V	
VS-F490EM/EO/EOH/ES	
VS-F497EOH	
BM-400682J1	Motor DFX-67B3VWB1 (Capstan Motor)
BM-387503J	Motor Part (Loading Motor)

Recommended Safety Parts		
Item	Part No.	Description
Models: EA/EDI		
D1 - D12	ED-511907	D Silicon 1N4002 100/1.0A
D16	ED-404029J	D Zener H UTZJ10B T26
D18	ED-511907	D Silicon 1N4002 100/1.0A
FR1 , FR3	ER-408375J	R Fuse V TO5RF25SCPVTP1/4WR12K
FR2, FR4	ER-400728J	R Fuse V TO5 RF25SCVTP1/4WR12K
FR5	ER-400605J	R Fuse V TO5 ERD2FCV1/4W15ROG
TR1	ET-381175J	TR 2SD1856
TR2, TR7	ET-366365	TR 2SB1185 E,F
TR3, TR4, TR5	ET-405622J	TR 2SD2061 E,F
TR6	ET-391025J	TR 2SD2012
Model: EM		
C101	EC-389414J	C CE V DE7 B102K 400AC
D3, D4	ED-511907	D Silicon 1N4002 100/1.0A
D6, D11	ED-386226J	D Schottky RB100AT-32T26 40/1
D8	ED-386226J	D Schottky RB100AT-32T26 30/1
D16	ED-307572	D Silicon H 1SS131
D17, D18, D71		
D72, D73, D74		
D101	ED-511907	D Silicon 1N4002 100/1.0A
FR1	ER-400728J	R Fuse V TO5 RF25SCVTP1/4WR12K
FR2	ER-408375J	R Fuse V TO5RF25SCPVTP1/4WR12K
FR3	ER-400605J	R Fuse V TO5ERD2FCV 1/4W15ROG
FR4	ER-400689J	R Fuse V TO5RF25SCVTP1/4WR68K
FR5	ER-405441J	R Fuse V TO5RF25SCVTP1/4WR68K
FR101	ER-400689J	R Fuse V TO5RF25SCVTP1/4WR68K
FR102	ER-401039J	R Fuse V TO5ERD2FCV 1/4W 4R7J
RL101	EQ-400153J	Relay POW AG2013 1TR 12V
TR1, TR5		
TR9, TR13	ET-366365	TR 2SB1185 E,F
TR2, TR7	ET-405622J	TR 2SD2061 E,F
TR4	ET-366168	TR 2SD1292 Q,R
TR12	ET-405622J	TR 2SD2061 E,F
TR107	ET-404195J	TR 2SC4486 S,T T05
IC1	EI-381575J	IC BA6121
19A	BT-410487J	Trans POW V1130 EA (EM)
19B	BT-410489J	Trans POW V1130 ES (ED1)
19C	BT-410488J	Trans POW V1130 EM (EM)
Models: F440EK/F490ES		
D1 - D12	ED-511907	D Silicon 1N4002 100/1.0A
D16	ED-404029J	D Zener H UTZJ10B T26
FR1 , FR3	ER-408375J	R Fuse V TO5RF25SCP1/4WR12K
FR2, FR4	ER-400728J	R Fuse V TO5RF25SCVTP1/4WR12K
FR5	ER-400605J	R Fuse V TO5ERD2FCV 1/4W15ROG
TR1	ET-381175J	TR 2SD1856
TR2, TR7	ET-366365	TR2SB1185 E,F
TR3 - TR6	ET-405622J	TR2SD2061 E,F
Model: F480EK		
D3, D4	ED-511907	D Silicon 1N4002 100/1.0A
D6, D8, D11	ED-386226J	D Schottky RB100AT-32T26 40/1
D17, D18, D71		
D72, D73, D74	ED-511907	D Silicon 1N4002 100/1.0A
FR1	ER-400728J	R Fuse V TO5 RF25SCVTP1/4WR12K
FR2	ER-408375J	R Fuse V TO5 RF25SCPVT1/4WR12K
FR3	ER-400605J	R Fuse V TO5 ERD2FCV 1/4W15ROG
FR4	ER-400689J	R Fuse V TO5 RF25SCVTP1/4WR68K
FR5	ER-405441J	R Fuse V TO5 RF25SCVTP1/4WR27K
TR1, TR5		
TR9, TR13	ET-366365	TR 2SB1185 E,F
TR12	ET-405622J	TR 2SD2061 E,F
Model: F480EK		
IC1	EI-381575J	IC BA6121
TR2, TR7	ET-405622J	TR 2SD2061 E,F
TR4	ET-404195J	TR 2SC4486 S,T T05
	BT-403872J	Trans Pow V1130 EK (440EK)
	BT-403883J	Trans Pow V1130 EOG-V (480EK)
	BT-410489J	Trans Pow V1130 ES (490ES)

Mechanical Parts List		Description		Part No.		Description		Part No.			
Description		Part No.									
All Models:											
Head Drum Block				Slider Front Loading		ML-387428J		SP Pull Main Brake		ZG-387320J	
Base Drum		MA-38747J3		Slider Pinch Part		ML-387431J1		SP Pull Review Brake		ZG-387323J	
BID26X08STL CMT		ZS-563444		SLIT W17X032X025PSL		ZW-374445		SP Pull Tension (2)		ZG-395470J	
BID30X06STL CMT		ZS-379405		SP Loading Brake		ZG-387467J		SP Push A/C		ZG-387438J1	
BID30X08STL CMT		ZS-321298		SP Plate Earth		ZG-392294J		SP Torsion Arm Damper		ZG-395567J	
				SP Plate Holder		ZG-387348J1		SP Torsion Damper (S)		ZG-387421J	
DT BID30X06STL CMT				SP Pull Main Brake		ZG-387320J		SP Torsion Damper (T)		ZG-388290J1	
C080		ZS-389853J		SP Pull Review Brake		ZG-387323J		SP Torsion Joint (2)		ZG-392831J	
Earth Brush Part AG		VT-401282J		SP Pull Tension		ZG-387272J		SP Torsion Load (S)		ZG-387417J	
				SP Push A/C		ZG-387438J1		SP Torsion Load (T)		ZG-387418J	
Holder FPC		SZ-387388J		SP Torsion Arm Damper		ZG-395567J		SP Torsion Release		ZG-387420J1	
Lower Drum BLK X450EGN		BV-V1123A410B		SP Torsion Damper (S)		ZG-387421J		SP Torsion Review		ZG-387282J	
MOTOR E20EL89				SP Torsion Damper (T)		ZG-8290J1		ST BID30X06STL CMT		ZS-358936	
(Drum Motor)		BM-401296J1		SP Torsion Joint (2)		ZG-392831J		ST BID30X12STL CMT		ZS-336714	
				SP Torsion Load (S)		ZG-387417J					
PAN26X12STL CMT		ZS-467796		SP Torsion Load (T)		ZG-387418J		Tension Arm Blk F600EA		BL-V1123A050A	
PAN30X06STL CMT		ZS-379350		SP Torsion Release		ZG-387420J1		Holder Lever Tension		SZ-3872631J4	
				SP Torsion Review		ZG-387282J		Tension Band Part		ML-390768J4	
ST BID30X12STL CMT		ZS-336714						Tension Brake Part		MZ-395471J3	
Upper Drum BLK X450EGN		BV-V1123A420B									
For Models:											
VS-F440EA/EDE/ED1/EK/EM/EO/EOG-V/EOH											
VS-F441EA											
VS-F450EOH											
VS-F455EOH											
6SET20X030SCM PKR DP		ZS-374458		6SET20X030SCM PKR FP		ZS-374458		Arm Coupling		ML-387311J2	
6SET30X080SCM PKR CP		ZG-373900		6SET30X080SCM PKR CP		ZG-373900		Belt Capstan (3)		MB-407117J	
				Arm Damper		ML-391745J3		PC (#) Sensor (2)KFX		EA-404543J	
				Arm Lid Opener		ML-387350J1		BID30X03STL CMT		ZS-425981	
				Arm Loading BLK 425EA		BL-V1102A140A					
				Arm Pinch Roller				Capstan Brake Part		LK-387458J2	
				BLK F410EK		BL-V1130A160A		Cord FFC P1.25 L=12013P (WP1)		EW-389313J	
				Arm Review Part		ML-387277J3					
				Arm Shutter		ML-387349J2					
				BID30X08STL CMT		ZS-321298		D LED GL451 Infrared (D1)		ED-390011J	
				Cassette Load BLK 425EA		BV-V1102A150A		Detector SG-105LF			
				Cushion Cover		SZ-391866J1		(PH1)(PH2)		ET-403420J	
				DISK (3) Part		MT-404547J		Disk Clutch (2) Part		MZ-404577J	
				DT BID30X06STL				Gear Cam Slider (3)		MZ-404538J	
				CMT C080		ZS-389853J		Gear Front Loading		MZ-387333J	
								Gear Toggle(S) BLK 425EA		MZ-V1102A090A	
								Gear Toggle(T) BLK 425EA		MZ-V1102A100A	
								Gear Worm (2)		MZ-401686J1	
								Gear Worm Wheel		MZ-387332J	
BID20X04STL CMT		ZS-464703		Gear Eject		MZ-387335J		Holder D-LED		MZ-387430J	
BID30X08STL CMT		ZS-321298		Gear MID Part		MZ-404995J		Holder Photo Sensor (2)		MZ-404542J	
Cassette Load BLK 425EA		BV-V1102A150A		Guide Front (2)		SE-395554J		Holder S Sensor		MZ-387445J	
Disk (2) Part		MT-390954J1		Guide Roller D8 Part		VT-387394J1		Holder Thrust Worm		MR-387406J	
Gear Eject		MZ-387335J		Head Combo HVMZA1121A		HR-405340J		Lever Trigger		ML-387402J1	
Guide Front (2)		SE-395554J		Head E HVFME0020A		HE-390013J		Motor DFX-67B3VWB1			
Guide Roller D8 PART		VT-387394J1		Holder FE Head Part B		MZ-402760J2		(Capstan Motor)		BM-400682J1	
				Idler (2) Part		MI-404552J		Motor Part (Loading Motor)		BM-387503J	
Head Combo HVMZA1121A		HR-405340J		Leader S BLK 425EA		BV-V1102A070A		PT BID26X06STL CMT		ZS-365149	
Head E HVFME0020A		HE-390013J		Leader T BLK 425EA		BV-V1102A080A		PT BID26X10STL CMT		ZS-389950J	
Holder FE Head Part B		MZ-40276060J2		Lever Damper (S)		ML-387345J		Pulley Trigger (2)		MR-391968J	
Holder Lever Tension (2)		SZ-407187J2		Lever Damper (T)		ML-387346J		PW26X060X050PSL		ZW-389923J	
Idler Part		MI-387294J		Lever Lock Release		ML-387344J					
								Slider Brake (3) Part		ML-404567J1	
Leader S BLK 425EA		BV-V1102A070A		Main Brake (S) Part		ML-387316J		Slider Trigger (2)		ML-404944J	
Leader T BLK 425EA		BV-V1102A080A		Main Brake (T) Part		ML-387318J		SLIT W21X040X050PSL		ZW-387492J	
Lever Damper (S)		ML-387345J		Mecha Deck BLK F410EK		B-V1130A020C		Socket 174074-5 SP (P1)		EJ-381837J	
Lever Damper (T)		ML-387346J		Nut Review		ZW-401776J		Socket Housing			
Lever Lock Release		ML-387344J						5062-30-10-13 (PS1)		EJ-387497J	
				PAN20X02STL BZN PS1		ZS-404844J		SP Pull Capstan Brake		ZG-387502J	
Main Brake (S) Part		ML-387316J		Pinch Roller (2) Part		MP-404852J		SP Pull Slider		ZG-387468J	
Main Brake (T) Part		ML-387318J		Plate Upper		MZ-387351J2		SP Pull Toggle		ZG-387413J1	
Mecha Deck BLK F260EA		BB-V1130A020H		PW31X110X050PSL		ZW-389814J		SP Torsion Coupling		ZG-387403J	
								SP Trigger		ZG-387443J	
PAN20X02STL BZN PS1		ZS-404844J		Retaining Ring Grip				ST BID30X06STL CMT		ZS-358936	
Pinch Roller (2) Part		MP-404852J		380STL ACP		ZW-332843		SW Leaf MTS10110MPC1		ES-373099	
Plate Upper (2)		MZ-406134J		Review Brake (3) Part		ML-407119J		SW Mode Select			
PW31X110X050PSL		ZW-389814J		Roller Impedance		MR-387286J1		MMS000702LBO (SW1)		ES-387465J	
Retaining Ring Grip				Slider Front Loading		ML-387428J		TR Photo PN268 (TR1)		ET-361490	
380STL ACP		ZW-332843		Slider Pinch Part		ML-387431J1		TR Photo PT493F (TR4)		ET-390009J	
Review Brake Part		ML-387321J		SLIT W17X032X025PSL		ZW-374445					
Roller Impedance		MR-387286J1		SP Plate Earth		ZG-392294J					
				SP Plate Holder		ZG-387348J1					

Replacement of the Gear Mid Part (JFX Only)



1) Remove the REVIEW BRAKE PART and IDLER (2) PART.

2) Release the stopper of the TAKE UP REEL TABLE, then remove it.

3) Remove the two "A" screws then replace the GEAR MID PART as shown above.

4) Reassemble in reverse order.

Precautionary items prior to adjustments

1. The colour bar generator output should be 1.0 Vp-p.
2. The video output terminal should be terminated with 75 ohms (connect dummy load or 75 ohms input TV).

The following test tapes are required.

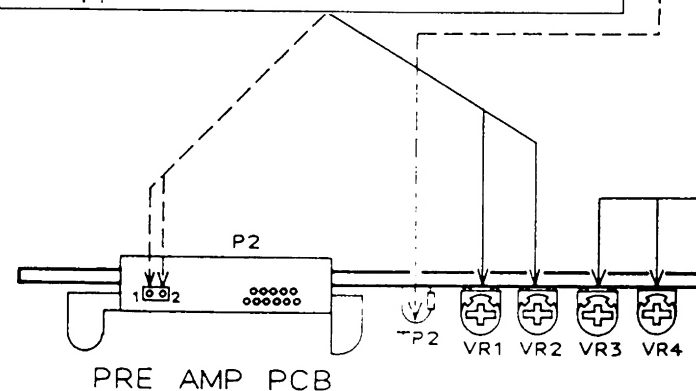
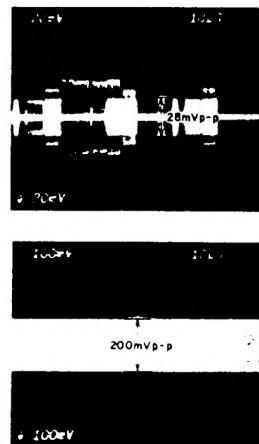
Test tape	Parts No.
TF-527BL	AT-711880
TF-530RFS	AT-751775
TF-532CBS	AT-751360
TF-553AT	AT-751785

STEP ADJUSTMENT ITEM

1. MODE and INPUT SIGNAL/TEST TAPE
2. TEST POINT and ADJ. part
3. REMARKS (*) & RESULT (*)

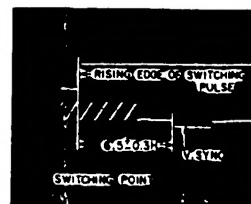
6 VIDEO REC CURRENT (LP MODE)

1. "REC" (LP MODE), PAL colour bar signal
2. P2 (REC.CURR) ① pin, ② pin & VR1 (REC-CHROMA), VR2 (REC-Y)
3. • Connect an oscilloscope's CH-1 to P2 (REC.CURR) ① pin and CH-2 to ② pin.
 - Set the oscilloscope's display mode to "ADD" mode and CH-2 polarity to "INVERTED". (Make sure to set the oscilloscope's "volt / div" SW position where the waveform is not distorted and CH-2 position should be the same as CH-1.)
 - Turn the VR2 (REC-Y) fully, counterclockwise.
 - Adjust VR1 (REC-CHROMA) so that the chroma REC current becomes 28 mVp-p at the burst signal area.
 - Disconnect the input signal, then adjust VR2 (REC-Y) so that the Y REC current becomes 200 mVp-p.



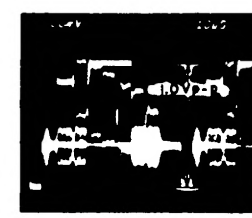
1 PB SWITCHING POINT

1. "PB", test tape TF-530RFS
2. TP2 (SWP), VIDEO OUT & VR301 (SW.POINT)
3. • Connect an oscilloscope's CH-1 to TP2 (SWP) for triggering and CH-2 to VIDEO OUT.
 - Adjust VR301 so that the switching point is positioned 6.5 H from the V-SYNC left edge as shown.



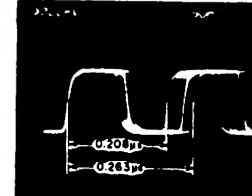
7 VIDEO PB LEVEL

1. "REC" → "PB", PAL colour bar signal
2. VIDEO OUT & VR404 (PB LEVEL)
3. • Connect an oscilloscope to VIDEO OUT
 - Make a recording on the tape, then play it back
 - Adjust VR404 so that the PB level becomes 1.0 Vp-p



5 CARRIER SET & DEVIATION

1. "REC", PAL colour bar signal
2. TP401 (REC.Y) & VR402 (CARRIER), VR403 (DEVIATION)
3. • Connect an oscilloscope to TP401 (REC.Y)
 - VR402 (CARRIER) : 0.263 μs (3.8 MHz)
 - VR403 (DEVIATION) : 0.208 μs (4.8 MHz)



3 AUDIO REC BIAS

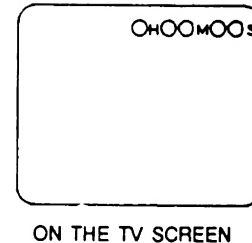
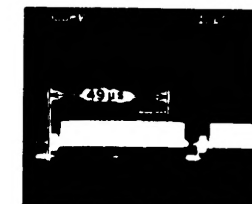
1. "REC", No signal input
2. P801 ① pin, ② pin & VR801
3. • Connect an AC voltmeter to P806 ① pin (GND side) and ② pin. (Never connect the AC voltmeter's GND to the VCR's ground.)
 - Adjust VR801 so that the reading on the AC voltmeter becomes 2.4 mV

2 AUDIO PB LEVEL

1. "PB", test tape TF-527BL
2. AUDIO OUT & VR802
3. • Connect AC voltmeter to AUDIO OUT
 - -5 dBs

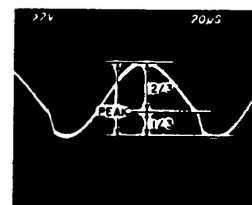
8 CHARACTER POSITION

1. "E-E" (STOP mode), No signal input
2. VIDEO OUT, TV screen & VC601 (IMS)
3. • Press the "DISPLAY" button once on the remote control to display the elapsed tape counter.
 - Connect an oscilloscope to VIDEO OUT
 - Adjust VC601 (IMS) so that the right end of the IMS signal becomes 49 μs from the H-SYNC as shown.



9 P/S AUTO SENSITIVITY (EM/EDG/EOG-V ONLY)

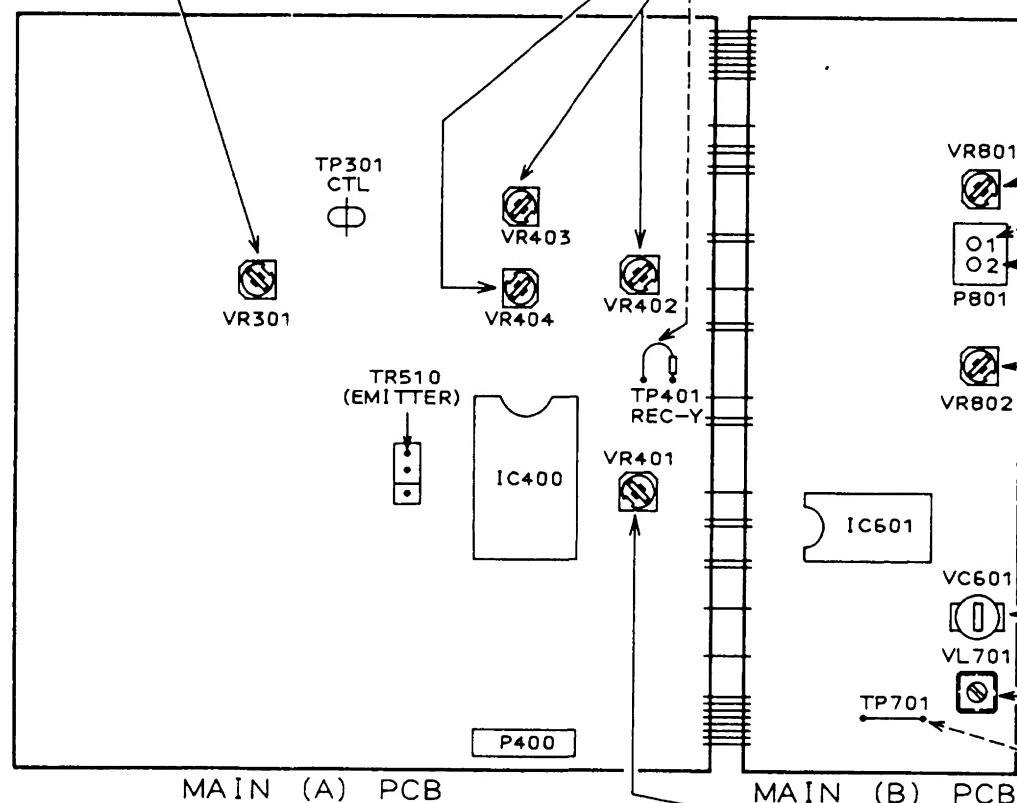
1. "E-E" (STOP mode), SECAM colour bar signal
2. TP701 (P/S SENS), VL701 (P/S SENS)
3. • Connect an oscilloscope to TP701 (P/S SENS)
 - Adjust the VL701 so that the distorted point of the waveform becomes 1/3 from the bottom, as shown.



10 ENVELOPE DETECT (I-HQ)

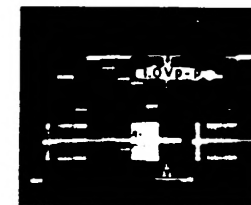
(This adjustment should be performed in the "TEST" mode.) To set the VCR to the "TEST MODE", press and hold both the "POWER" and "EJECT" buttons on the front panel, then plug in the AC power cord. The TEST MODE can be cancelled by disconnecting the AC power cord or simply by pressing the RESET button on the front panel.

1. "REC" → "PB", PAL colour bar signal
2. FL display & VR3, VR4
3. • Record the PAL colour bar signal on the test tape TF-553AT and then play it back.
 - Observe the number which is displayed on the minute part of the FL display.
 - Adjust the VR3 so that the number displayed on the FL display becomes "8D". (SP MODE)
 - Adjust the VR4 so that the number displayed on the FL display becomes "8D". (LP MODE)



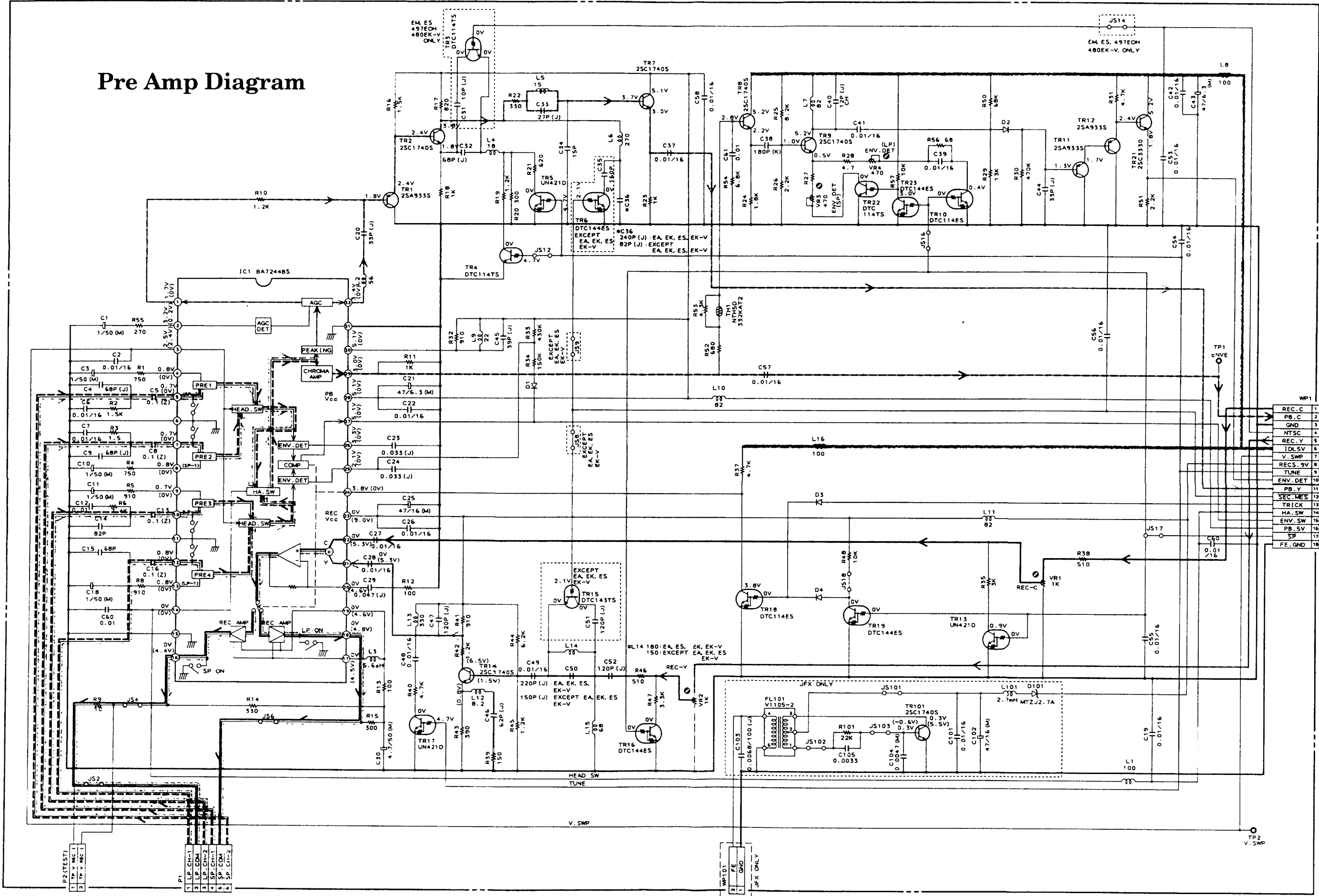
4 VIDEO E-E LEVEL

1. "E-E" (STOP mode), PAL colour bar signal
2. VIDEO OUT & VR401 (E-E LEVEL)
3. • Connect an oscilloscope to VIDEO OUT.
 - 1.0 Vp-p





Pre Amp Diagram



TO VIDEO HEAD BLOCK

PRE AMP PCB V113485030

8 (POWER SUPPLY) LINE
PB Y SIGNAL LINE
REC Y SIGNAL LINE
PB CHROMA SIGNAL LINE
REC CHROMA SIGNAL LINE

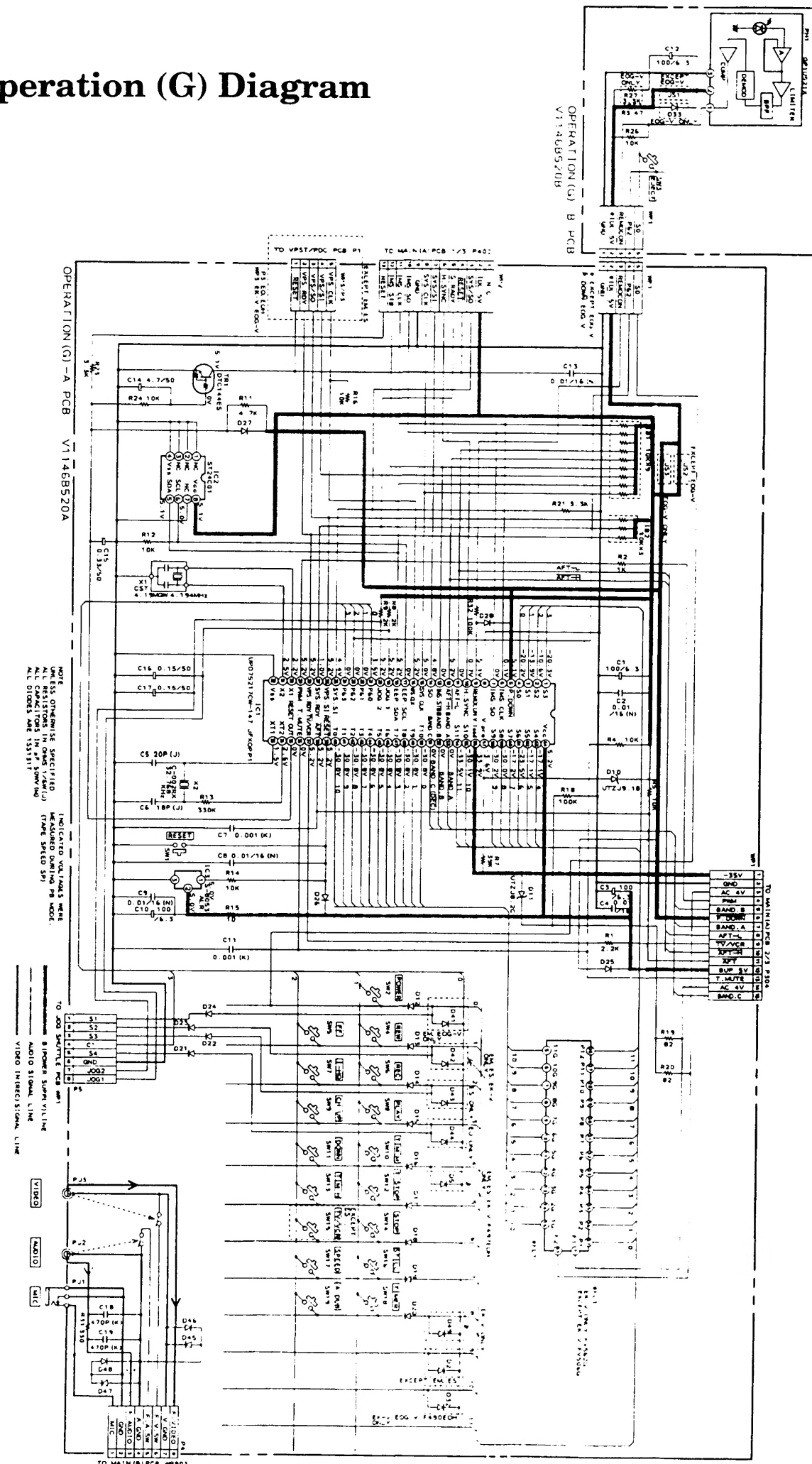
TO FULL TRACK ERASE HEAD

INDICATED VOLTAGES WERE
MEASURED DURING PB MODE.
() REC MODE

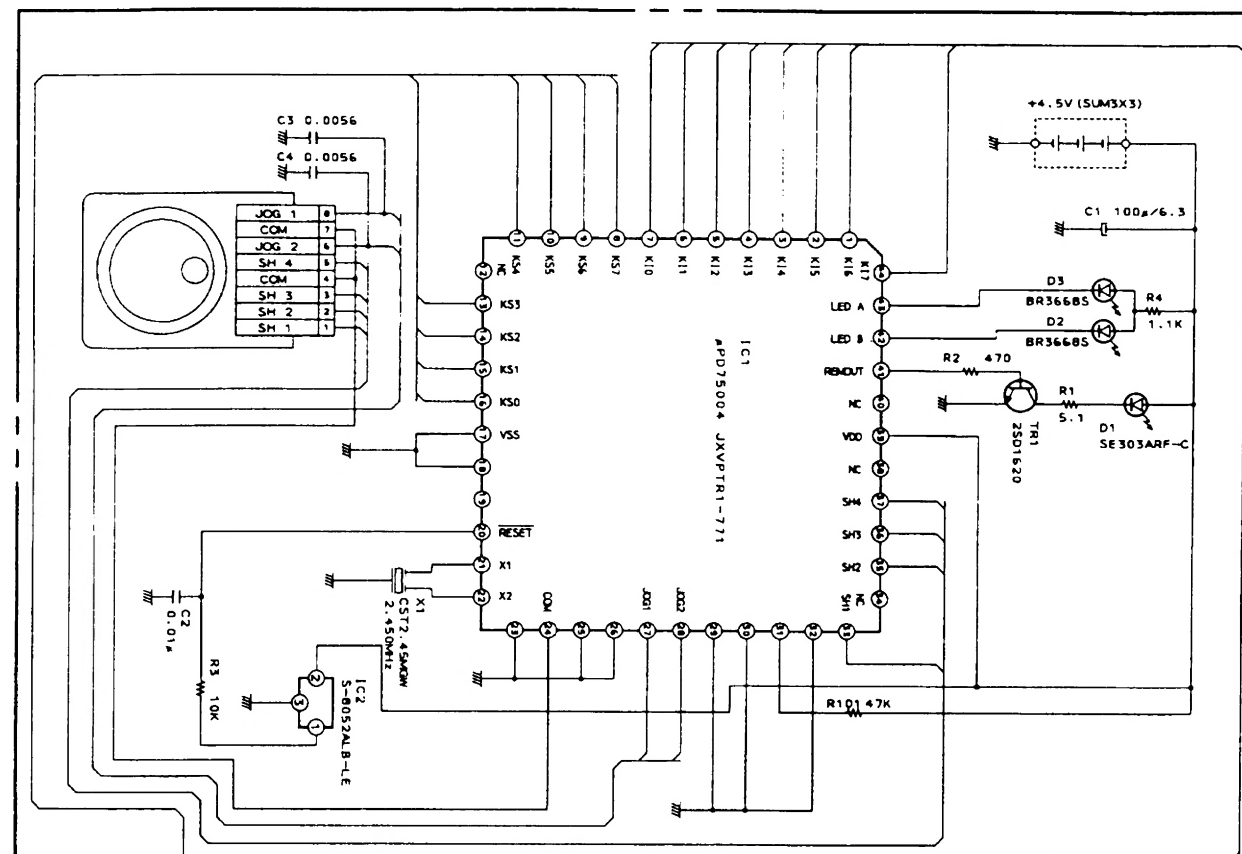
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN μ F
ALL INDUCTORS IN μ H (K)
ALL DIODES ARE 1SS131
TRANSISTORS 25A9335 AND 25C1740 CAN BE
SUBSTITUTED FOR 25A1317 AND 25C3330 RESPECTIVELY

JFX/JFX-L
PRE AMP

Operation (G) Diagram



Remote Control Diagram RC-V451E



K10	TV/VCR	1		0	AV	SP/LP	3	2
K11	SHIFT<	4	TEXT/TV	7	8	9	6	5
K12	SHIFTV		REW Q		LOCK SHUTTLE		INDEXD	
K13	SHIFTA	1-ING	RED	PLAYD	FF BD	GREEN	CYAN	YELLOW
K14	S/N CANCEL	REMAIN	INDEX M		CHANNEL		DISPLAY	COUNTER RESET
K15	SHIFT>	TIMER		STOP □	00 PAUSE / STILL		INDEX M	DOUBLE HEIGHT
K16	AUTO TRACKING	REC Q	POWER	EJECT	MONITOR		CH UP A	CH DOWN V
K17	OK	PGM LIST	VPT	PROGRAM		STOP/?	NEXT	MENU

UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/8W (J)
ALL CAPACITORS IN μ F 50WV (J)

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/8W (J)
ALL CAPACITORS IN μ F 50WV (J)

RC-V451E/G

RC-V452E